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A System Integrating Direct Costing, Standard Costs, Flexible Budgets and Return on Investment

After reading the title one might ask "What Else Do You Need?" After reading the article you may come to the conclusion that not much else is needed. This article is without doubt the most comprehensive article written on the subject of coordinating the best of the modern day procedures in the factory accounting field.

INTRODUCTION

Whenever a new technique is introduced into any field of endeavor, the following usually happens:

(1) An attempt is made to overemphasize the use of the new theory and extend it into many areas where it is not suitable; it becomes a cure-all for all of the real and fancied shortcomings of current methods.

(2) Two opposing schools of thought emerge and there is a formation of teams on each side of the subject with myriads of pro and con articles written and many heated discussions.

Over the years, as new accounting and budgeting techniques have been introduced, they have given rise to debates. For example, there have been many papers presented and articles written upon the subject "Flexible Budgets Versus Fixed Budgets". The current controversy concerns "Direct Costing Versus Absorption Costing".

Nearly everyone believes that Direct Costing is a definite forward step in cost accounting techniques and is an extremely useful management tool and the usefulness of the control features of Direct Costing are readily acceptable but disagreement arises in respect of the financial aspects of this new method. To many, the valuation of inventories at only the direct or variable costs and the treatment of fixed costs as period costs in the financial statements, is unacceptable and unfortunately, therefore, in the minds of these individuals, the whole subject of Direct Costing becomes discredited and unworthy of adoption.

The accounting system described in this article demonstrates how all of the beneficial control features of Direct Costing may be adopted without affecting either the valuation of inventories or the financial statements. There should be no conflict between Direct Costing and Absorption Costing or between Fixed Budgets and Flexible Budgets because each of these techniques serves different purposes and complements one another.

To do a good complete job and satisfy all of the requirements regarding data for the making of proper management decisions, a manufacturing company should have the following:

(1) Flexible budgets for cost control.

(2) Fixed budgets for financial control and forward planning.

(3) A standard cost accounting procedure to augment flexible budgets in the control of costs and to reveal volume variances. Also, standard or normal product costs that include both direct and fixed

costs so that proper selling prices may be determined and product lines may be studied.

(4) Direct Costing so that fixed costs and variable costs are separately known. This data is essential to a study of the product line and the determination of selling prices in a highly competitive buyer's market. A separation of fixed and variable costs is also essential in arriving at proper decisions when making economic studies and furthermore, this separation greatly facilitates such studies. Cost-profit-volume relationships and break-even point studies cannot be made effectively without a careful separation of fixed and variable costs.

(5) In addition to the flexible and fixed budgeting and the standard cost accounting and direct costing procedures, it is well worthwhile to develop and know the investment required to manufacture each product so that computations may be made to reveal the return on investment by products. This data also permits the computation of selling prices for any desired return on investment and is particularly useful in setting selling prices in a seller's market.

It would seem that a procedure embodying all of the features that have been enumerated would be difficult to develop and install and cumbersome and expensive to operate but this is not true.

In this article, the case example method is used to explain in sequence the steps taken in developing and installing the kind of system outlined above. Also, the accounting procedure, the data obtained, the reports that are prepared and how this information is used by various levels of management is described. Although the procedure is for a single company in a specific industry, the principles set forth may be applied in any manufacturing company. However, it should be stressed that the details of cost accounting procedures and particularly budget systems must be tailor-made for the particular industry and company.

ESTABLISHING NORMAL LEVEL OF OPERATIONS AND TREATMENT OF FIXED COSTS ON BUILDINGS AND MACHINERY AND EQUIPMENT IN EXCESS OF REQUIREMENTS FOR NORMAL CAPACITY

While there are several methods that may be used to determine a normal level of sales, a description of these methods is beyond the scope of this article. It is suffice to state that there must be a normal forecast of sales by products.

The machinery and equipment and building space required to produce the normal sales volume is ascertained and after making an allowance for equipment normally out of service for repairs and an allowance for flexibility in production schedules, the excess equipment and excess floor area is determined and the depreciation, taxes and insurance applicable to the excess equipment and floor area is assigned to a Cost Center entitled "Unused Space and Equipment". These costs do not become a part of standard product costs but are charged monthly to a Profit and Loss Account.

There are several reasons for segregating costs pertaining to equipment and space in excess of normal requirements and the more important of these are the following:

(1) The equipment requirements of the plant are brought into balance and bottleneck operations are revealed.

(2) Product costs are not burdened with idle equipment costs and, other things being equal, the plant's costs are competitive with any other manufacturer who does not have excess equipment.

(3) The cost of each product is not affected by the cost of companion products made at the same time. Therefore, the cost of each product is the same as it would be in a plant of comparable size designed only for that product.

EXHIBIT 1
BUDGET DATA SHEET

Plant	Name of Cost Center: CHURNING	Account No. 10201-208
Source of Data: INDUSTRIAL ENGINEERING STANDARDS	Date Effective	Sheet No. 1
Description of Expense: Labor - Churn Operators	Budget Revisions: Date	Sheet No.
Trucking crumbs from Mercerizing Cellar to Churn Room, dumping crumbs in churns, transferring crumbs from churns to mixers, cleaning churns, keeping records		
Activity Factor: NUMBER OF STEEPS PROCESSED - ALL DAYS (24 hrs/Day)	Fixed or Variable: STEP VARIABLE	

Steeps Processed Per Week	Crew Size Per Shift	Hours Per Week	Average Rate	Weekly Amount	Daily Amount	Annual Amount
NO. 1 CHURN ROOM:						
-- to 609	3	504	$ 1.870	$ 942	$ 135	$ 48,177
610 to 840	4	672	1.858	1,249	178	61,974
841 to 1099	5	840	1.850	1,554	222	77,476
1100 to 1302	6	1,008	1.845	1,860	266	92,126
NO. 2 CHURN ROOM:						
-- to 609	3	504	1.870	942	135	48,177
610 to 840	4	672	1.858	1,249	178	61,974
841 to 1099	5	840	1.850	1,554	222	77,476
1100 to 1302	6	1,008	1.845	1,860	266	92,126
NO. 3 CHURN ROOM:						
-- to 609	3	504	1.870	942	135	48,177
610 to 840	4	672	1.858	1,249	178	61,974
841 to 1099	5	840	1.850	1,554	222	77,476
1100 to 1302	6	1,008	1.845	1,860	266	92,126
Additional Labor for Making Flushing Steeps:						
July 4th Break - 128 Steeps x $1.6329/Steep =				$ 209		
Christmas Break - 64 Steeps x $1.6329/Steep =				105		

ANNUAL AMOUNT - 51.143 Weeks x Weekly Amount

WAGE RATES (Includes Shift Premium)

Charge Hands	- $1.92	- R-3
CS_2	1.87	- R-3
Churn Men	1.82	- R-3
Crum Truckers	1.82	- R-3

APPROVALS	Department	Engineering	Laboratory	Fin. Dir.	Plant Manager

DEVELOPMENT OF FLEXIBLE BUDGETS

Before developing flexible budgets for the various items of cost in each cost center, the normal production schedule is used to compute the normal or standard production units for each manufacturing operation. This is necessary so that as the flexible budgets are developed, the standard amounts for the standard level of production will be known and this data is used in the computation of standard overhead rates and standard product costs.

Budget Data Sheets (Exhibit 1) are prepared for each element of cost in each cost center.

Since budgets are revised when manufacturing methods are changed without a corresponding revision of standard costs, there is a space provided on Budget Data Sheets to list all interim budget revisions between periods of revisions of standard costs.

On each Budget Data Sheet (Exhibit 1), it should be noted that the annual amount at the standard or normal level of operations is shown in a rectangle and this is the amount used in the determination of standard costs.

Budgets are not set by the Accounting Department or by the Budget Department. The work is a collaborative effort between the Budget Department and the Department Head of the department being budgeted. The Budget Department furnishes data for study and examination and assists the Department Head who sets his own budget. All Budget Data Sheets are signed by the Department Head and approved by the Plant Manager.

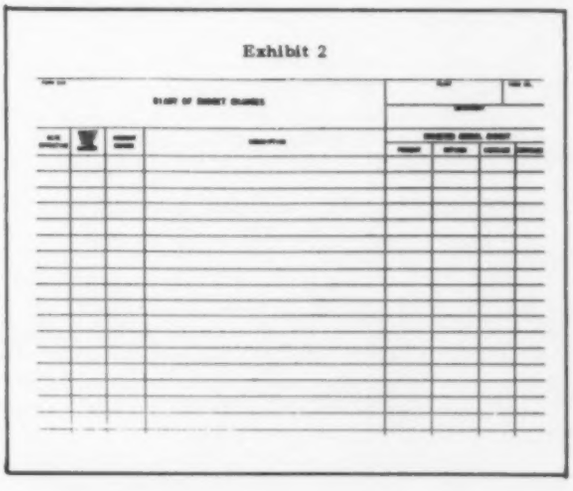
In respect to the classification of costs as either fixed or variable, there are really no costs that are strictly fixed because, at some level of management, a decision can be made to change or even eliminate entirely any item of cost. For example, depreciation, taxes and insurance may be eliminated by liquidating a plant and even the President's salary may be cut by action of the Board of Directors. However, within the usual operating levels of a plant, it is possible to classify expenses as fixed or variable even though some of them may be partially fixed and partially variable. Throughout the budgeting and accounting procedures, the segregation between fixed and variable costs should be maintained so that in each accounting period there is a knowledge regarding whether costs that have been classified as fixed actually remain fixed and how costs classified as variable vary with production. This is not only helpful when budgets are revised but it will also indicate the reliance that can be placed upon this data when it is used for making economic studies.

Flexible budgeting is simply a system of manufacturing expense control for varying levels of production. The monthly budgeted amounts for each expense in a department are determined after the production is known by referring to the Budget Data Sheets and computing the budget by application of the activity factor. This method is a positive and easily understood expense control because the budget for each expense depends upon the actual production of the operation during the accounting period and avoids the necessity of taking inventory changes into account, a computation which is usually confusing to a manufacturing supervisor.

There are many advantages to basing budgets upon good past performance rather than upon ideals. This fact is stressed when assisting Department Heads in the setting of budgets. Since ideals, in many cases, cannot be achieved, budgets based upon ideals prove discouraging to a Department Head and cause loss of interest. A budget based upon good past performance is one which has been achieved and therefore it provides a good bench mark which will measure either progress or retrogression.

Budgets which are used as the basis for computation of standard costs are known as "base budgets". For good cost control, budgets should be representative of current methods and therefore, if there are changes in manufacturing specifications or changes in methods, budgets are immediately revised and the new revised budget is known as the "current budget". When a budget is revised, an entry is made in a Diary of Budget Changes (Exhibit 2) describing the budget change and showing the effect of the change and showing the effect of the change on the annual normal costs.

Exhibit 2



There is a sheet in the Diary for each cost center so that a continuous record of budget changes by cost center is available. The Diary of Budget Changes is used monthly for the preparation of a report showing all methods changes and the effect of such changes on costs and profits. This information is therefore reported to management much quicker than it would be if it was obtained from the regular accounting reports.

Both the "base budget" and the "current budget" are tied in with the cost accounting system and there is a variance account for the difference between the "base budget" and the "current budget". This account shows the effect on the current month's costs of all budget revisions that have been made since the base budgets were set. A year-to-date figure is also reported so that a measure of the effectiveness of methods changes is always available.

USE OF FIXED BUDGETS

Budgets are used for both planning and control. Flexible budgets provide the means for controlling costs whereas fixed budgets are necessary for profit planning. There should never be a controversy as to whether a company should have Fixed or Flexible Budgets because, as stated previously, they serve different purposes and both types of budgets are necessary.

The Fixed Budget starts with a forecast of sales, usually made in the Fall for the following year, and from the Sales Budget, a Production Budget and Finished Goods Inventory Budget are prepared. The Budget Data Sheets, previously described in connection with the Flexible Budgeting system, are used to compute the budgeted manufacturing cost for the Profit and Loss Budget.

The Profit and Loss Budget with the Cash Budget, the Capital Expenditure Budget and various other budgets are submitted to the Board of Directors as the plan of operation for the coming year and deviations from the plan are explained monthly.

An explanation of the Fixed Budget is not the purpose of this discussion. It is suffice to indicate how it is developed and how it ties in with the Flexible Budget and to state that it is required for profit planning purposes.

ACCOUNTING FOR PAYROLL RELATED COSTS

It has been customary in most companies to treat all payroll related costs as overhead costs despite the fact that when payroll related costs pertaining to direct labor are treated in this manner, errors in product costs result. This is due to the different bases used for allocating direct labor and overhead costs to products.

Since payroll related costs are really a part of the cost of labor, the payroll related costs pertaining to direct labor should be a direct charge to costs in the same manner as direct labor costs. In the accounting system described in this article, payroll related costs and payroll costs have identical accounting treatment.

DETERMINATION OF STANDARD OVERHEAD RATES

Budget Data Sheets are used for all costs, that is, for direct labor costs, direct raw material costs and overhead costs. As illustrated on Exhibit 1, the budgeted amounts for the standard or normal level of operations are set forth in a rectangle. After the Budget Data Sheets for all manufacturing expenses are prepared, the amounts in rectangles in respect of overhead costs, are used to develop normal or standard overhead rates.

A description of the techniques used for distributing overhead and developing standard overhead rates is beyond the scope of this article, but Exhibit 3 is a Cost Center summary showing the computation of a standard overhead rate.

EXHIBIT 3

[redacted] Cost Center 208

Direct Costs	References: F - Factor E - Element C - Center	Annual Amount Fixed	Variable	Total	Investment
Depreciation - Buildings 12381 Sq. Ft. @ $.14356	F I	$ 1,777		$ 1,777	$ 55,000
Depreciation - Machinery and Equipment	F II	5,595		5,595	100,811
Real Estate Taxes 12381 Sq. Ft. @ $.02768	E 2	343		343	
Fire Insurance	F III	55		55	
Personal Property Taxes $100,813 x $.00155	E 3	156		156	
State Capital Tax $1,300 x $.00874	E 4	11		11	1,300
Supplies	E 14	888		888	
Total Direct Costs		$ 8,775		$ 8,775	$157,935
Allocated Investment for Working Capital					$ 37,741
Sold Service Costs					
M & M Machinery and Equipment	F IV	$ 27,416	$ 415	$ 27,831	$ 17,510
Machine Changes (Engineering Labor)	F X	2,376	50	2,426	2,150
Manufactured Supplies - Small Tools	F XI	46		46	
Boiler House	C 831	2,107	2,132	4,239	15,044
Power House	C 830	2,524	851	3,375	22,057
Total Sold Service Costs		$ 34,473	$ 3,448	$ 37,917	$ 57,561
Allocated Costs					
Compressor Room	C 841	$ 16,151	$ 6,489	$ 22,640	$110,032
Humidification and Air Conditioning	C 840	5,119	1,397	6,480	20,092
Janitor Service	C 850	422	3	425	289
Viscose General	C 210	48,320	7,175	55,495	81,280
Total Allocated Costs		$ 70,005	$15,095	$ 85,099	$208,505
Cost Center Totals		$113,253	$18,462	$131,731	$401,682

Fixed Overhead Rate = $113,253 / 224,271 = $.505 Per Churn Hour

Variable Overhead Rate = $ 18,462 / 224,271 = $.082 Per Churn Hour

Total Overhead Rate = $.587 Per Churn Hour

Investment Rate = $401,682 / 224,271 = $2.148 Per Churn Hour

Distributed To Factor XVIII -	Fixed	Variable
	$260	$36

It should be noted that these statements adhere to the principles of direct costing by maintaining the segregation between fixed and variable costs. Also, costs are separated into three categories: Direct Costs, Sold Service Costs and Allocated Costs. On this statement, Direct Costs are characterized as those that are charged directly to a cost center and include both fixed and variable costs. Sold Service Costs are costs of Service Departments that are always charged to cost centers by the use of a standard overhead rate. For example, costs of the Power Plant Cost Center are always charged to other cost centers at the standard cost per kilowatt hour. Allocated Costs are costs of Service Cost Centers that are allocated on some appropriate basis.

NORMAL OPERATING INVESTMENT

One of the features of the system explained in this article is the determination of investment and profit on investment by products so that the line of merchandise may be studied, the adequacy of selling prices determined and information revealed regarding the steps that should be taken in the area of marketing and merchandising to augment profits.

The subject of investment is being explained at this point because the work in respect of allocating investment and determining investment by products is done concomitantly with the work of developing standard costs.

There are many different opinions in accounting and financial circles regarding the items that should constitute investment. In the procedure described herein, the following items are included:

(1) The investment at cost of acquisition in land, buildings, machinery and equipment. As previously stated, the investment in unused facilities and in facilities that are in excess of normal requirements are excluded by carrying this investment to a Cost Center entitled "Unused Space & Equipment".

(2) The investment at normal operating level in inventories of raw materials, work in process, finished goods and factory supplies.

(3) The normal sales value of one month's sales as the investment in accounts receivable. This is predicated upon the basis that the accounts receivable turnover is once per month and if the turnover is different than once per month, the investment should be computed accordingly.

(4) The requirement for cash and working capital, other than accounts receivable, should be studied. In the case example which is being described, a study revealed a necessity for other working capital equivalent to one month's normal cost of sales, excluding depreciation and other non-cash items, plus one month's expenses for selling, administrative and research activities.

DISTRIBUTION OF INVESTMENT TO COST CENTERS AND COMPUTATION OF INVESTMENT RATE

The following methods are used in the allocation of investment to cost centers:

(1) The investment in land and buildings is distributed on the basis of the floor area occupied by each cost center.

(2) The property records list the investment in machinery and equipment by cost center so that is no problem.

(3) The investment in raw material inventories is allocated on the basis of the normal value of raw materials used in each cost center.

(4) The work in process inventory investment is allocated to cost centers on the basis of the normal value of the inventory located in each cost center.

(5) The stores inventory investment is allocated on the basis of the normal value of stores materials issued to each cost center.

(6) In the case example being presented, the investment in finished goods inventory and in working capital constituted 11% of the total investment. Therefore, this investment was allocated on the basis of the relative amounts of investment already distributed to cost centers.

After the investment has been determined for each cost center, the investment in service cost centers is allocated to the productive cost centers. This allocation is made in the same manner and on the same basis as the allocation of overhead costs. This is an acceptable method since it is based upon the principle that the investment should be allocated in proportion to the service rendered.

Standard or normal investment rates are computed in the same manner as standard overhead rates. For example, Exhibit 3 shows that the investment required per machine hour is $2.15. This rate, in itself, is not meaningful but when it is divided by the production per hour, the investment per unit of production is known. This is a step in the procedure for determining investment by products because the investment requirement for each product is the sum of the investment requirements by operation. The investment per unit of product in each operation is dependent upon the time required for processing which is the period of time that the product uses the investment.

COMPUTATION OF STANDARD PRODUCT COSTS

After the Budget Data Sheets have been completed and the standard overhead rates have been computed, the next step is the determination of standard product costs.

Exhibit 4 with the heading "Calculation of Standard Costs" shows these calculations for raw materials, direct labor, direct labor payroll related, overhead and waste costs. All of the data used in these computations originated on the Budget Data Sheets.

It should be noted that in the calculation of standard product costs, the separation between fixed and variable costs has been maintained. With the usual direct costing system, only the direct or variable product costs would be known but the fixed product costs have also been calculated because, as demonstrated later in this discussion, it is necessary to know fixed as well as variable product costs.

EXHIBIT 4

CALCULATION OF STANDARD COSTS

Churning - 208

(Costs per Steep Processed)

	Fixed	Variable
Direct Labor & Payroll Related - Variable		
Annual Labor Cost = $159,266		
Annual Steeps = 97,509		
Labor Cost per Steep = $\frac{\$159,266}{97,509}$ =		$1.6333
Annual Payroll Related Cost = $33,419		
Payroll Related Cost per Steep = $\frac{\$33,419}{97,509}$ =		$ .3427
Overhead		
Churn Hours per Steep = 2.30		
Fixed Overhead Rate per Churn Hour = $.505		
Fixed Overhead Cost per Steep = 2.30 x $.505 =	$1.1615	
Variable Overhead Rate per Churn Hour = $.082		
Variable Overhead Cost per Steep = 2.30 x $.082 =		$ .1886
Raw Material		
Carbon Bisulphide for Bright & semi-dull		
Pounds per Steep = 73.09		
Allowance for Evap. Leaks = .61		
Total Pounds per Steep = 73.70		
Delivered Price per Pound = $.0545		
Material Cost per Steep = $.0545 x 73.70 =		$4.0167
Waste Allowance		
Number of Steeps Processed = 97509		
Number of Steeps to Waste = 24		
Percentage Waste = $\frac{24}{97509}$ = .0246%		
Cumulative Standard Fixed Cost Through Churning Excluding Waste Cost = $5.9142		
Cumulative Standard Fixed Cost Through Churning = $\frac{\$5.9142}{.999754}$ = $5.9157		
Standard Fixed Waste Allowance Cost per Steep = .000246 x 5.9157 =	$ .0015	
Cumulative Std. Variable Cost Through Churning Excluding Waste Allowance = $38.0668		
Cumulative Standard Variable Cost Through Churning = $\frac{\$38.0668}{.999754}$ = $38.0762		
Standard Variable Waste Allowance Cost per Steep = .000246 x $38.0762 =		$ .0094

Form C-620

EXHIBIT 5

STANDARD PRODUCT COST

Plant _____ Product _____ Date _____

COST CENTER	NORMAL OPERATING INVESTMENT PER POUND	VARIABLE COSTS							FIXED COSTS			TOTAL COST	
		RAW MATERIAL	PACKAGING MATERIAL	DIRECT LABOR	DIRECT PAY-ROLL RELATED	OVERHEAD	WASTE	TOTAL	OVERHEAD	WASTE	TOTAL	OPERATION	CUMULATIVE
	$	$	$	$	$	$	$	$	$	$	$	$	$
Pulp Preparation													
Steep. & Pfleid.													
Mercerizing													
Churning	4.9472	4.0167		1.6333	.3427	.1886	.0094	6.1907	1.1615	.0015	1.1630	7.3537	43.5419
Mixing													
Viscose Cellar													
Total Per Steep													
Total Cost/lb. Viscose													
Box Spinning													
Cake Strip. & Wrap.													
Cake Washing													
Cake Drying													
Cake Coning													
Cone Inspect. & Pack.													
Shipping													
Total Lot Cost													
Quality Adjustment													
Adj. Inv. Value													

Type _____ Package _____ Mill _____ Size Mix _____ Unit _____ T.P.U. _____ Freight A.D. _____ G.A. & A.D. _____ Handling Index _____ Sales Price _____

Profit ÷ Fixed Cost / Sales _____ + _____ = _____ Profit / Sales _____ = _____ Sales / Investment _____ = _____ Profit / Investment _____ = _____

STANDARD PRODUCT COST SHEET

The Standard Product Cost Sheet (Exhibit 5) is used to summarize the cost of each product. The Standard Product Cost Sheet shows variable costs and fixed costs by operation, the total cost by operation and the cumulative cost at each point in the process. It also shows the investment per unit of product by operation and the total investment.

The costs for the various operations are added to obtain the total cost of the product and this cost is called the Total Lot Cost.

After the entry for Total Lot Cost, there is a line entitled "Quality Adjustment" and another line entitled "Adjusted Inventory Value" which may require explanation. In some manufacturing industries, a portion of the product is classified as first quality and a portion as second and third quality and there are differentials in the selling prices for the various qualities. The inventory values are adjusted because of the different selling prices in such a manner that the relationship between cost and selling price for each quality is the same. This is a well recognized cost accounting practice in industries where products of different quality grades carrying different selling prices are sold. In such cases, quality budgets should be established and variance accounts should be set up to reflect deviations from budgeted quality standards.

At the bottom of the Standard Product Cost Sheets there is a line describing the product and setting forth those manufacturing specifications that affect costs. This line also shows the average outward freight cost, the normal selling, administrative and research cost, the net market or realizable value and the selling price.

The last line on the Standard Product Cost Sheet sets forth certain relationships that are used in a study of the product line. These relationships are the following:

(1) Profit plus fixed cost divided by selling price. This is the P/V ratio that you hear much about in any discussion concerned with direct costing. In a typical direct costing system, it is obtained by subtracting the direct or variable cost from the selling price and dividing this difference by the selling price. In the system described herein, the profit and fixed cost part of the numerator are separately known since this information, as shown later, is essential.

(2) Profit per dollar of sales.

(3) Sales per dollar of investment.

(4) Profit per dollar of investment.

USE OF PRODUCT COST DATA

In respect to the Standard Product Cost Sheet, the following questions arise:

(1) What does this data mean?

(2) How can the information be used constructively?

The meaning of the relationships at the bottom of the Standard Product Cost Sheet may be summarized in the following manner:

(1) If the P/V ratio is a minus quantity, the variable costs exceed the selling price and are only partially absorbed and none of the fixed costs are absorbed.

(2) If the P/V ratio is zero, the variable costs exactly equal the selling price and the loss is equal to the amount of the fixed cost.

(3) If the P/V ratio is a positive figure, the variable costs are less than the selling price and a portion of the fixed costs are being absorbed.

(4) If the P/V ratio is equal to the fixed costs divided by the selling price, the profit is zero and all costs are being absorbed. In the usual system of direct costing, there would be no knowledge of the point where all fixed costs are being absorbed because fixed product costs are not computed.

(5) If the P/V ratio exceeds the fixed costs divided by the selling price, all costs are being absorbed and there is a profit. In this instance, this situation would also not be known in a system of direct costing because the fixed costs are not known.

(6) Profit per dollar of investment is really the true criterion to use as a measure of the worth of any product because the only reason for being in business is to obtain the maximum return on the money invested by the stockholder. Profit per dollar of investment is equal to profit per dollar of sales multiplied by sales per dollar of investment. If the return on investment is not adequate, one of three things or some combination of them is not proper. The fault must be attributable to one or a combination of the following:

(a) Costs are too high.

(b) The investment is too great.

(c) The selling price is not high enough.

An acceptable rate of return on investment can be established as a general rule but it is not possible to adopt a general rule for all products in respect of profit per dollar of sales and sales per dollar of investment because these ratios will vary with the type of product being manufactured. These latter ratios are only useful as a means of comparing product lines or if there is a change in the actual return on a product line between two periods, a comparison of these ratios will indicate whether costs have changed, selling prices have changed or the investment has changed.

The data on the Standard Product Cost Sheet

EXHIBIT 6

ECONOMIC ANALYSIS OF PRODUCT LINE

	Per Pound Statistics									Assuming a Profit of 20% on Investment		
Item	Investment	Selling Price	Fixed Cost	Variable Cost	Total Cost	Profit	Fixed Cost ÷ Total Cost	Profit + Fixed Cost ÷ Sales	Profit ÷ Investment	Selling Price Per Lb.	Profit Per Lb.	Profit + Fixed Cost ÷ Sales
1	$ 3.83	$ 4.69	$1.14	$0.14	$ 3.28	$1.41	34.8%	54.4%	43.5%	$ 3.94	$ .66	45.5%
2	3.16	4.81	1.14	2.31	3.45	1.36	33.0	51.8	42.8	4.08	.63	43.3
3	3.71	5.18	1.35	2.45	3.80	1.38	35.6	52.8	37.0	4.54	.74	46.0
4	3.76	5.18	1.38	2.50	3.88	1.30	35.6	51.8	34.6	4.62	.74	46.0
5	3.51	4.93	1.28	2.46	3.74	1.19	34.2	50.3	34.1	4.44	.70	44.5
6	16.80	17.48	6.97	4.90	11.87	5.61	58.8	71.9	33.4	15.23	3.36	68.0
7	2.87	3.58	1.00	1.65	2.65	.93	37.7	54.2	32.6	3.22	.57	48.6
8	3.67	4.93	1.33	2.50	3.83	1.10	34.7	49.3	30.1	4.57	.74	45.3
9	4.76	5.73	1.77	2.55	4.32	1.41	41.0	55.7	29.8	5.27	.95	51.5
10	3.35	3.76	1.19	1.75	2.94	.82	40.6	53.7	24.8	3.60	.66	51.4
11	5.09	5.73	1.91	2.58	4.49	1.24	42.5	55.0	24.3	5.51	1.02	53.0
12	3.35	3.76	1.19	1.77	2.96	.80	40.2	53.0	24.0	3.62	.66	51.1
13	5.09	5.73	1.91	2.62	4.53	1.20	42.1	54.3	23.5	5.55	1.02	52.7
14	8.18	9.10	3.27	4.12	7.39	1.71	44.3	54.8	20.9	9.03	1.64	54.3
15	3.35	3.76	1.19	1.87	3.06	.70	39.0	50.2	20.9	3.72	.66	49.7
16	2.94	3.33	1.01	1.76	2.77	.56	36.4	47.3	19.1	3.36	.59	44.3
17	6.65	6.72	2.53	3.00	5.53	1.19	45.8	55.3	17.8	6.86	1.33	56.2
18	3.38	3.76	1.18	2.04	3.22	.54	36.6	45.9	16.0	3.90	.68	47.6
19	3.28	3.39	1.16	1.71	2.87	.52	40.3	49.6	16.0	3.52	.65	51.4
20	3.38	3.76	1.18	2.05	3.23	.53	36.5	45.7	15.7	3.91	.68	47.5
21	2.55	3.09	.86	1.83	2.69	.40	32.0	40.7	15.8	3.20	.51	42.7
22	2.55	3.09	.86	1.83	2.69	.40	32.0	40.7	15.7	3.20	.51	42.7
23	3.38	3.76	1.18	2.09	3.27	.49	36.1	44.5	14.5	3.95	.68	47.0
24	5.30	5.55	2.04	2.73	4.77	.78	42.8	50.6	14.5	5.83	1.06	53.1
25	3.38	3.76	1.18	2.09	3.27	.49	36.1	44.5	14.4	3.95	.68	47.0
26	3.38	3.76	1.18	2.09	3.27	.49	36.1	44.5	14.4	3.95	.68	47.0
27	3.16	3.64	1.11	2.08	3.19	.45	34.7	42.8	14.3	3.82	.63	45.5
28	3.67	3.89	1.29	2.08	3.37	.52	38.1	46.6	14.1	4.11	.74	50.0
29	3.32	3.46	1.17	1.83	3.00	.46	38.9	47.0	13.8	3.66	.66	50.0
30	9.13	8.01	3.52	3.23	6.75	1.26	52.1	59.6	13.7	8.57	1.82	62.2
31	3.96	3.89	1.43	1.93	3.36	.53	42.5	50.4	13.4	4.15	.79	53.5
32	3.96	3.89	1.43	1.93	3.36	.53	42.5	50.3	13.3	4.15	.79	53.5
33	3.96	3.83	1.40	1.77	3.17	.66	44.2	50.5	13.3	3.96	.79	55.3
34	9.25	8.01	3.55	3.27	6.82	1.19	52.1	59.1	12.8	8.67	1.85	62.2
35	3.96	3.83	1.40	1.80	3.20	.63	43.8	49.7	12.6	3.99	.79	55.0
36	3.38	3.76	1.18	2.15	3.33	.43	35.4	42.9	12.6	4.01	.68	46.5
37	3.96	3.89	1.43	1.96	3.39	.50	42.2	49.6	12.6	4.18	.79	53.0
38	3.38	3.76	1.18	2.16	3.34	.42	35.3	42.7	12.5	4.02	.68	46.3
39	3.62	3.95	1.27	2.25	3.52	.43	36.0	43.0	12.0	4.25	.73	46.9
40	3.16	3.64	1.11	2.03	3.14	.50	35.3	40.8	12.0	3.77	.63	46.0
41	3.55	3.52	1.24	1.88	3.12	.39	39.8	46.6	11.2	3.84	.72	50.9
42	3.62	3.95	1.27	2.30	3.57	.38	35.5	41.7	10.6	4.29	.72	46.5
43	3.38	3.76	1.18	2.24	3.42	.34	34.5	40.7	10.6	4.10	.68	45.3
44	3.15	3.33	1.09	1.92	3.01	.32	36.3	42.4	10.2	3.64	.63	47.3
45	3.16	3.64	1.11	2.23	3.34	.31	33.2	38.7	9.7	3.97	.63	43.7
46	3.96	3.83	1.40	1.92	3.32	.38	42.2	46.6	9.6	4.11	.79	53.3
47	3.96	3.89	1.43	2.09	3.52	.37	40.6	46.2	9.3	4.31	.79	51.4
48	3.33	3.83	1.17	2.36	3.53	.30	33.1	38.1	8.7	4.19	.66	44.7
49	3.67	3.89	1.29	2.28	3.57	.32	36.2	41.4	8.6	4.31	.74	47.1
50	3.84	3.76	1.37	2.08	3.45	.32	39.6	44.8	8.4	4.21	.76	50.6
51	3.38	3.76	1.18	2.31	3.49	.27	33.8	38.7	7.9	4.17	.68	44.5
52	3.95	4.07	1.40	2.36	3.76	.31	37.3	42.2	7.9	4.55	.79	48.2
53	3.79	3.64	1.33	2.02	3.35	.30	39.7	44.7	7.8	4.11	.76	50.8
54	3.33	3.83	1.17	2.42	3.59	.23	32.5	36.5	6.9	4.25	.66	43.0
55	3.95	4.07	1.40	2.41	3.81	.26	36.8	40.9	6.5	4.60	.79	47.5
56	3.31	3.46	1.14	2.10	3.24	.21	35.2	39.3	6.4	3.90	.66	46.2
57	3.23	3.39	1.27	1.93	3.20	.20	39.6	43.1	6.0	3.85	.65	50.0
58	3.90	3.46	1.37	1.86	3.23	.23	42.4	46.1	5.9	4.00	.77	53.7
59	3.90	3.52	1.40	1.91	3.31	.21	42.4	45.8	5.5	4.08	.77	53.4
60	3.95	4.07	1.40	2.50	3.90	.17	36.0	38.9	4.4	4.69	.79	46.7
61	4.67	3.89	1.57	2.13	3.70	.18	42.5	45.4	4.3	4.63	.93	54.0
62	3.96	3.89	1.43	2.29	3.72	.17	38.4	41.2	4.3	4.51	.79	49.2
63	3.33	3.83	1.17	2.51	3.68	.15	31.8	34.3	4.3	4.34	.66	42.2
64	5.41	5.67	2.04	3.39	5.43	.24	48.5	50.0	4.2	6.51	1.08	59.0
65	3.62	3.95	1.27	2.56	3.83	.12	33.1	35.0	3.2	4.56	.73	43.7
66	5.41	4.62	2.03	2.56	4.59	.03	44.2	44.7	.6	5.67	1.08	54.8
67	3.95	4.07	1.40	2.69	4.09	(.02)	34.2	34.0	(.6)	4.89	.79	44.5
68	3.96	3.89	1.43	2.48	3.91	(.02)	36.5	36.1	(.7)	4.70	.79	47.1
69	5.41	5.67	2.04	3.70	5.74	(.07)	35.5	34.7	(1.3)	6.82	1.08	45.8
70	3.96	3.89	1.43	2.53	3.96	(.07)	36.0	34.9	(1.8)	4.75	.79	43.4
71	5.34	5.18	1.99	3.28	5.27	(.09)	37.8	36.6	(1.9)	6.35	1.08	48.3
72	5.41	5.67	2.04	3.78	5.82	(.15)	35.1	33.3	(2.8)	6.90	1.08	45.3
73	5.41	5.67	2.04	3.81	5.85	(.18)	34.9	32.7	(3.4)	6.93	1.08	45.0
74	3.96	3.89	1.43	2.61	4.04	(.15)	34.3	32.8	(3.9)	4.93	.79	44.7
75	2.93	2.10	.58	1.64	2.22	(.12)	26.1	22.2	(5.9)	2.60	.38	36.9
76	4.69	3.21	1.87	2.23	4.10	(.89)	45.6	30.6	(19.0)	5.03	.93	55.7

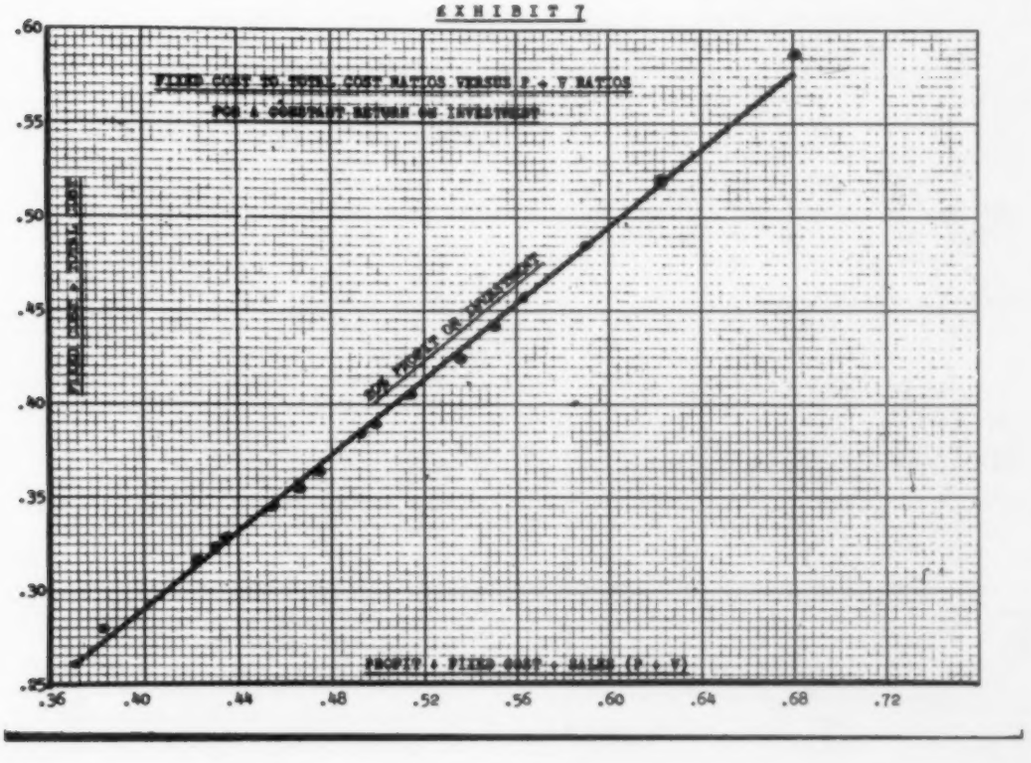
should be used to study a product line because considerable benefit may be gained from such a study. Exhibit 6 entitled "Economic Analysis of Product Line" is a compilation of data summarized from Standard Product Cost Sheets for a complete product line. For confidential reasons, the per pound figures have been multiplied by a factor and since the factor is the same in all cases, the ratios that are shown are correct. The items in the line are arranged in the order of return on investment before taxes and it should be noted that the return on investment ranges from a profit of 43.5% to a loss of 19%. It should also be noted that the P/V ratio, which is shown in the column for profit plus fixed cost divided by sales, does not follow the return on investment or seem to have any relationship to it. Item 1 has a P/V ratio of 54.4% and Item 17 has an almost identical P/V ratio of 55.3% yet the profit on investment for these items is 43.5% and 17.8% respectively. The three columns at the right side of this statement show the figures that would result if each item had a 20% return on investment. With a constant rate of return on investment of 20% for each item in the line, the P/V ratio varies from a high of 68 (Item 6) to a low of 36.9 (Item 75). A study of the data reveals that the reason for the P/V variation with a constant rate of return on investment is because the ratio of the fixed cost to the total cost for all items is not constant. This fact is borne out if the ratios of fixed cost to total cost for each item in the line are plotted on a graph against the P/V ratios for a constant rate of return on investment. The result is a straight line, as shown on Exhibit 7. This study confirms the following facts:

(1) P/V ratios are not an accurate gauge of the profitability or preference of products.

(2) P/V ratios are dependent upon the relationship of fixed costs to total costs.

(3) It is necessary to know both fixed product costs and variable product costs when making product line studies and formulating therefrom proper management decisions.

EXHIBIT 7



The data on Exhibit 6 reveals a horrible situaction which is all too prevalent in many industries. It is obvious that selling prices have been set by various companies in the industry without any logical basis, and that every company has apparently followed the pattern set by competition.

There is nothing more important to a company than its selling prices because selling prices are directly reflected in profits, yet in many cases the techniques of proper selling price determination and the economics pertaining to a study of product lines seem unknown. All too often companies adopt the attitude that competition sets selling prices and they can do nothing. Here is a field in which the accountant can collaborate with the marketing specialist. The marketing specialist can appraise the situation and estimate the volume that can be sold at various prices. The accountant, with a knowledge of fixed and variable product costs will know the effect of volume on unit costs and profits. With this information, steps may be taken, in either a buyer's or seller's market that will maximize profits and secure an advantage over any competitor not armed with similar information.

Policy in respect of selling prices depends upon whether there is a seller's market or a buyer's market. In a seller's market when manufacturing operations are at capacity and there is an opportunity to select business, there should be an effort to sell items with the highest rate of profit on investment. In a buyer's market, when operations are curtailed, the effort should be to sell items that have the greatest contribution to profit plus fixed overhead. During such periods, it is good business to be satisfied, if necessary, with selling prices that may not return a profit but will absorb a portion of the fixed overhead. At such times, to use an old adage "half a loaf is better than none".

EXHIBIT 8

PROFIT PREFERENCE WHEN OPERATIONS ARE CURTAILED

	Product A	Product B
Fixed Cost	$ 1.20	$ .25
Profit	(.75)	.10
Profit and Fixed Cost	$ .45	$ .35
Advantage	$ .10	

It may seem paradoxical to state that when operations are curtailed, it is sometimes advantageous to accept business where there is a loss in place of business that has a profit. This situation is shown on Exhibit 8. For example, Item A has a loss per unit of $.75 whereas Item B has a profit per unit of $.10. Item A has a fixed cost per unit of $1.20 whereas Item B has a fixed cost per unit of $.25. The contribution of Item A to profit and fixed cost is $1.20 per unit minus $.75 per unit or $.45 whereas the contribution of Item B to profit and fixed cost is $.10 per unit plus $.25 per unit or $.35. It is obvious that the advantage is with Item A and this advantage is $.10 per unit even though the item shows a loss of $.75 per unit. This is another illustration of the value of a segregation between fixed and variable costs.

Proper study of a product line and proper determination of a selling price policy is only possible by a separation of fixed and variable costs and by a disclosure of all of the other data shown on the Standard Product Cost Sheet.

Some other uses for product cost data are the following:

(1) Valuation of inventories at standard costs.

(2) Assistance to the Production Planning Department in determining the plant to assign additional production. Since the fixed and variable product costs are known and the fixed costs will remain constant, additional production should be assigned to the plant with the least variable cost.

(3) Determination of the plant to complete processing of a semi-finished product. After considering freight costs, the answer is to select the plant with the least variable cost.

(4) Determination of the effect on costs and profits of a change in production schedule. This may be done by multiplying each item in the proposed new schedule by unit selling prices to obtain total sales, then multiplying each item by the unit standard variable cost and adding to it the total fixed cost to obtain cost of sales. A comparison of the same figures for the current production schedule will reveal the difference in sales, costs and profits. Without a segregation of fixed and variable product costs, it is necessary to make a detailed study of all costs and this requires considerable time.

(5) Facility in the construction of break-even charts for any product mix.

There are many other uses for standard product cost data, with a separation of fixed and variable costs, particularly in the area of economic studies.

ACCOUNTING PROCEDURE FOR COST CONTROL

A brief explanation of the accounting procedure in respect of obtaining cost control information,

and particularly the tieing-in of flexible budgets with standard costs, is essential to an understanding of the system described in this article. The variance accounts and the accounting entries are shown below:

(1) Raw Materials

(a) Purchase Price Variance = Actual quantity used at actual purchase price minus actual quantity used at standard purchase price.

(b) Usage Variance = Actual quantity used at standard purchase price minus current budgeted quantity at standard purchase price.

(c) Budget Revision Variance = Current budgeted quantity at standard purchase price minus standard or base budget quantity at standard purchase price.

(d) Accounting Entries

Actual quantity used at actual purchase price
Debit - Purchase Price Variance Account
Credit - Raw Material Inventory Account

Actual quantity used at standard purchase price
Debit - Usage Variance Account
Credit - Purchase Price Variance Account

Base Budget (Actual production at standard cost)
Debit - Work In Process Inventory Account
Credit - Budget Revision Variance Account

Current Budget (Actual production at revised budgeted cost)
Debit - Budget Revision Variance Account
Credit - Usage Variance Account

(2) Direct Labor

(a) Labor Usage Variance = Actual labor cost minus current budget.

(b) Budget Revision Variance = Current budget minus base or standard budget.

(c) Step Level Variance = Base or standard budget minus standard labor cost.

(d) Accounting Entries

Actual labor cost
Debit - Usage Varriance Account
Credit - Accrued Payroll Account

Current Budget
Debit - Budget Revision Variance Account
Credit - Usage Variance Account

Base Budget
Debit - Step Level Variance Account
Credit - Budget Revision Variance Account

Standard Cost
Debit - Work In Process Inventory Account
Credit - Step Level Variance Account

All direct labor budgets that are not on piece work are step level budgets with labor requirements for specified production ranges. The standard labor cost is a straight line variation with production so that the standard labor cost for actual production may be different than the budgeted labor cost. The step level variance account measures this difference and it may indicate that the labor force cannot be used efficiently at the actual level of production and that a revision of the production schedule may result in a more efficient utilization of labor.

(3) Direct Payroll Related Costs

The accounting and the variance accounts for direct labor payroll related costs are the same as for direct labor costs.

(4) Overhead

(a) Usage Variance = Actual overhead cost minus current budget.

(b) Budget Revision Variance = Current budget minus standard or base budget.

(c) Productivity Variance = Earned or absorbed overhead minus total standard cost.

(d) Unabsorbed Overhead = Actual overhead minus earned overhead minus usage variance minus budget revision variance.

(e) Volume Variance = Productivity variance plus unabsorbed overhead.

(f) Accounting Entries

Actual overhead cost
Debit - Cost Center
Credit - Accrued Payroll, Accounts Payable, etc.

Actual overhead less Current Budget
Debit - Usage Variance Account
Credit - Cost Center

Current Budget less Base Budget
Debit - Budget Revision Variance Account
Credit - Cost Center

Earned Overhead (standard overhead rate times actual man or machine hours)
Debit - Productivity Variance Account
Credit - Cost Center

Standard Overhead (units produced times standard overhead cost per unit)
Debit - Work In Process Inventory Account
Credit - Productivity Variance Account

Productivity variance is the difference in overhead cost due to the actual production per man hour or per machine hour being different than the standard production per hour. The amount of the unabsorbed overhead at the standard production rate per man or per machine hour is the volume variance due to the actual level of production being less than the standard or normal. However, since an account for productivity variance is

being used, volume variance is equal to the algebraic sum of productivity variance and unabsorbed overhead.

The accounting shown above covers the principal cost variances, although there are also variance accounts for waste, product quality, yield and for some operations there are special variance accounts for mechanical and chemical efficiencies.

In respect of Service Cost Centers, inefficiencies or variances are accounted for in the cost center where they originate and are not distributed to other cost centers.

In respect of Service Cost Centers, inefficiencies or variances are accounted for in the cost center where they originate and are not distributed to other cost centers.

Because of the tie-in between the flexible budgeting procedure and the standard cost accounting system, the budget work and the cost accounting work must be done simultaneously each month in order to prepare journal vouchers and close the books.

COST CONTROL REPORTS

The cost control reports which are called "Cost Analysis Reports" are of major importance.

Exhibit 9 is a sample Cost Analysis Report for a cost center. Costs are segregated between costs that are controllable at the department level and costs that are not controllable. The heading in the column "F" or "V" indicates whether the expense has been classified as fixed or variable. Careful segregation of fixed and variable costs is of paramount importance because major decisions are based upon the accuracy of this segregation. In the plant where this system was first installed, budgeted fixed costs for the first four months of operation totaled $2,956,268 and the actual fixed costs were $2,971,668, a difference of only .52%. It is important to make this comparison because there must be confidence that accurate data is being used for economic studies upon which management decisions are based.

EXHIBIT 9

COST ANALYSIS REPORT

MONTH_____

SCHEDULE No._____

PLANT_____

COST CENTER_____

ELEMENT OF EXPENSE	F or V	THIS MONTH					YEAR TO DATE		
		BASE BUDGET	BUDGET CHANGES	CURRENT BUDGET	ACTUAL	USAGE VARIANCE	BUDGET CHANGES	ACTUAL	USAGE VARIANCE
CONTROLLABLE COSTS:									
Direct Materials:									
Direct Labor:									
Direct Payroll Related—Hourly									
Total Direct Costs									
Overhead:									
Indirect Labor—									
Indirect Payroll Related—Hourly									
Engineering Service—									
Machine Charges									
R & M Machinery & Equipment—Labor & O. H.									
R & M Machinery & Equipment—Material									
Supplies—									
Other Expenses—									
Expense Credits—									
NON-CONTROLLABLE COSTS:									
Depreciation, Taxes & Insurance									
Allocated Service Costs									
Industrial Engineering									
Total Overhead									
Grand Total									
Earned Overhead (Hours x Standard Overhead Rate)									
Unabsorbed Overhead (Actual O. H.—Earned O. H.—Budget Revision Variance—Usage Variance)									
Productivity Variance (Earned O. H.—O. H. Standard Cost)									
Operating Step Level Variance—Labor (Base Budget—Labor Standard Cost)									
Operating Step Level Variance—Payroll Related (Base Budget—Payroll Related Standard Cost)									
Waste Variance (Actual Waste Cost—Standard Waste Cost)									

In addition to the cost analysis reports for each cost center, there are the following control reports:

(1) A Summary Statement of Plant Operations for overall review so that cost centers showing significant variances may be quickly detected.

(2) A Summary Report of Cost Variances to aid in quickly locating trouble spots.

(3) A Summary Control Report for raw materials.

(4) A Summary Control Report of budgeted and actual waste by operations.

(5) A Summary Control Report of repairs and maintenance.

(6) A narrative report setting forth reasons for significant variances.

(7) A Weekly Budget Report for labor only so that labor variances may be revealed before a month has elapsed and appropriate action may be taken.

CONCLUSION

The system explained in this article summarizes the results of manufacturing operations by areas of responsibility. For example, Volume Variance, the amount of unabsorbed overhead due to volume, is the responsibility of the Sales Department (with the typical system of Direct Costing, this figure is not known); Usage Variances and Budget Revision Variances are the responsibility of the Manufacturing Department; Step Level Variance is caused by the type of production schedule and is the responsibility of the Production Planning Department; Purchase Price Variance is the responsibility of the Purchasing Department.

The integration in one unified system of the benefits of direct costing, standard costs, flexible budgets and return on investment by products will provide all segments of management with data for guidance in the making of decisions and assist materially in maximizing profits.

REPORT OF THE ELECTION COMMITTEE

Secretary HAROLD COLTMAN submitted to the Board of Directors the report of the Election Committee on the National Election of Officers and Directors of the National Society for Business Budgeting for the society year beginning July 1, 1959 showing the election of the following –

Office	Name	Chapter
PRESIDENT	– R. VISSCHER MILLAR	PHILADELPHIA
FIRST VICE PRESIDENT	– ARTHUR D. MOOR	SAN FRANCISCO
SECRETARY	– LESLIE G. HAWKINS	NEW MEXICO
TREASURER	– BERNARD W. SCHALLER	TWIN-CITIES
3 YR. DIRECTOR-AT-LARGE	– LAWRENCE P. HAVERKAMP	CINCINNATI
3 YR. DIRECTOR-AT-LARGE	– JACK L. SELKOWITZ	NEW YORK
1 YR. DIRECTOR-AT-LARGE	– DONALD E. BACON	CALUMET REGION
DIRECTOR-AT-LARGE (REPRESENTING MEMBERS AT LARGE)	– LAWRENCE D. WHITING	AT-LARGE

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RESPONSIBILITY ACCOUNTING

This article could serve as a base on which to build true responsibility accounting. Defined, as it were, to specific people in the organization instead of to inanimate objects, such as departments. Perhaps, what Prof. Daniels is advocating fits a smaller company than many of the organizations represented by our members, but, nevertheless, it has some interesting aspects to it which may help get certain of your top executives interested in budgets and budget performance. Do you think it makes a difference to say, "The Sales Department didn't meet its goal," or "The Sales Manager failed to obtain his budgeted sales"?

Are your profits what they should be? Is your financial condition what it should be? Are you obtaining the desired teamwork among your executives to maximize profits? A strategic managerial device recently has been created which will assist you constructively in achieving simultaneously all of the above objectives: it is the Budgeted Summary of Financial Transactions. Filene's, a department store, provides a model illustration.

Because most businesses accomplish results through people, the management of Filene's wisely adopted the Budgeted Summary of Financial Transactions as an effective means for simultaneous profit control and financial planning through responsibility accounting. The financial reporting system was constructed on the basis of the firm's organization chart in terms of who was responsible for each facet of the financial success of the enterprise. Moreover, the budget was planned on the charge and discharge concept of responsibility accounting. Each executive, therefore, was responsible for more than a simple net result.

A new form of budgeting emerged. For the first half of this year, the budget took the following innovational form:

	($1,000)
Merchandise Manager:	
Sales	4,250
Cost of sales	3,000
Inventory purchases	3,100
Credit Manager:	
Charges to customers	4,100
Collections from customers	3,900
Accounts Payable Manager:	
Vouchers to clear for payment	3,850
Credit purchases	4,160
Vice-President:	
Administrative expenses	350
Short-term financing	300
Investment income	25
Short-term notes to clear for payment	400
Advertising Manager:	
Selling expenses	500
Store Manager:	
General expenses	228
Chief Accountant:	
Allowance for depreciation	10
Allowance for uncollectible accounts	2
Treasurer:	
Cash receipts	4,375
Cash disbursements	4,306
President:	
Dividends	50

Each person having executive authority and responsibility for results had specific dollar goals and complementary controls. Thus, the charge and discharge principle of financial accountability was fulfilled. But, most important, if each executive achieved his goals or targets planned in the budget, not only would the profit for the period reach the anticipated level, but the balance sheet as well as the financial condition of the business would be precisely as planned.

Futhermore, teamwork was engendered. If the Treasurer, for example, reaches his goal (a control point of $4.375 million of cash receipts), he must work closely with a Credit Manager for collections from customers, with the Merchandise Manager for cash sales, and with the Vice-President for short-term financing and investment income. The Credit Manager must work closely with the Merchandise Manager to obtain his charges-to-customers goal of $4.1 million. The Merchandise Manager is involved in the teamwork because he must look to the Treasurer for cash inventory purchases, and to the Accounts Payable Manaager for credit purchases. In addition, he must look to the Credit Manager for credit approvals in order to build non-cash sales. Teamwork is nurtured because each member of the management team sees how each needs the other.

How did the actual results obtained approximate the planned goals? The Budgeted Summary of Financial Transactions provides the answer.

Filene's, Inc.

BUDGETED SUMMARY OF FINANCIAL TRANSACTIONS
First Half Year, This Year

	Budget ($1,000)	Actual ($1,000)	% of Budget
Merchandise Manager:			
Sales	4,250	4,200	-1.2
Cost of sales	3,000	3,100	-3.3
Inventory purchases	3,100	3,200	-3.2
Credit Manager:			
Charges to customers	4,100	3,900	-4.9
Collections from customers	3,900	3,850	-1.3
Accounts Payable Manager:			
Vouchers to clear for payment	3,850	3,850	0.0
Credit purchases	4,160	4,175	-0.4
Vice-President:			
Administrative expenses	350	352	-0.6
Short-term financing	300	300	0.0
Investment income	25	25	0.0
Short-term notes to clear for payment	400	400	0.0
Advertising Manager:			
Selling expenses	500	552	-10.4
Store Manager:			
General expenses	228	228	0.0
Chief Accountant:			
Allowance for depreciation	10	10	0.0
Allowance for uncollectible accounts	2	2	0.0
Treasurer:			
Cash receipts	4,375	4,475	+2.3
Cash disbursements	4,306	4,445	-3.2
President:			
Dividends	50	50	0.0

The Budgeted Summary of Financial Transactions exhibits where results were not as planned and who was responsible. Both the Income Statement and the Balance Sheet are under simultaneous control.

The above Budgeted Summary of Financial Transactions resulted in the following financial statements:

Filene's, Inc.

INCOME STATEMENT

	Budget ($1,000)	Actual ($1,000)	Variance ($1,000)
Sales	4,250	4,200	-50
Cost of sales	3,000	3,100	-100
Gross margin	1,250	1,100	-150
Selling expenses	500	552	-52
General expenses	228	228	0
Administrative expenses	350	352	- 2
TOTAL OPERATING EXPENSES	1,078	1,132	-52
Operating income	172	(32)	-204
Investment income	25	25	0
Net income	197	(7)	-204

Filene's, Inc.

BALANCE SHEET
End of First Half Year, This Year

	Budget ($1,000)	Actual ($1,000)	Variance ($1,000)
Current assets:			
Cash	169	130	- 39
Accounts receivable (less allowance for uncollectible accounts)	492	342	-150
Inventory	800	800	0
TOTAL CURRENT ASSETS	1,461	1,272	-189
Investments	250	250	0
Store fixtures (less allowance for depreciation)	80	80	0
	1,791	1,602	-189
Current liabilities:			
Accounts payable	460	475	- 15
Notes payable	350	350	0
TOTAL CURRENT LIABILITIES	810	825	- 15
Capital stock	500	500	0
Retained earnings	481	277	-204
	1,791	1,602	-189

NOTE: In the variance column, the minus sign indicates unfavorable variance.

What truly useful purposes do the above Income Statement and Balance Sheet provide for internal managerial actions? None -- it would appear. They seem superfluous; they are a natural result of the Budgeted Summary of Financial Transactions technique. If planned performance is achieved in accordance with this new technique, the Income Statement and the Balance Sheet will automatically be as planned. They reflect only net changes. The Budgeted Summary of Financial Transactions, however, presents gross changes -- a more positive control

Why did Filene's miss its budgeted profit so far? Who was responsible? The Budgeted Summary of Financial Transactions reveals the answers directly. The Merchandise Manager missed his budgeted sales by $50,000, and his cost of sales was $100,000 too high. The Advertising Manager went over his budget by $52,000. The Vice-President exceeded his budget by $2,000. The net result, of course, was that instead of a profit of $197,000, Filene's sustained a $7,000 loss. Significant, too, is the fact that although the Merchandise Manager had the largest unfavorable dollar difference between budget and actual, the Advertising Manager had the greatest percentage variance between budget and actual.

From the standpoint of the Balance Sheet, it will be observed that although the Treasurer's cash receipts were $100,000 more than planned, his disbursements were $139,000 in excess of planned disbursements, a fact which resulted in cash on

(Cont'd. on Pg. 21)

Scrap Seat–Of–Pants Methods
Of Setting Promotional Expenditures And - - -

TAILOR AD BUDGET TO FIT THE TASK

By: Jerome B. Gray
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How well do you appreciate your Advertising Director? Do you think he knows his job? A criteria could be whether he is simply spending company money at a given rate or amount, or if he has planned objectives in his ad budget. The author takes issue with all who do not know in advance what they are trying to accomplish through advertising and who do not build the budget around the task. The Budget Director should be a staunch supporter of this method, as all budgets should be planned to fit the task - - - not simply spend or limit spending. We think you'll like this.

There are many methods and combinations of methods---good, fair, downright wasteful or almost wicked---of establishing an annual advertising budget in business and industry.

Some would send Alice scuttling back to Wonderland, convinced that less violence was done there to sanity.

It may be your budget is all wrapped up, long since indeed, and you won't have to do battle again for another six months or so. Or then again, working on a fiscal year, you may be right in the struggle, one that has made stong men weep.

To give you some idea of how far advertising is from a science--how far advertisers are, incidentally, from being seasoned--let's have a look at some of the budget-making methods:

One of the oldest, called "scientific" in its day, is known as the "percent-of-sales" method. With this method---still used, incidentally, by 13.2 percent of all industrial advertisers---the budget is determined mathematically and automatically by a percentage of gross sales of the previous year. Mathematically, this is simple enough. Philosophically, it has its problems, for someone must decide the percentage to use; and if this decision cannot be made to management's satisfaction by whim, by lot or by mirrors, someone is sure to suggest the adoption of the national, average percentage used by competitive or contemporary advertisers.

So now you're on your way; and on the basis of national averages in the industrial field, your 1959 budget will be 2.5 percent of 1958 gross sales if you are selling chemicals and allied products; 3.7 percent if you are selling stone, clay and glass products; 2.4 percent if you are selling primary metals; 4.2 percent if you are selling fabricated metal products; 2 percent if you are selling machinery; 3.7 percent if you are selling electrical equipment; and 7.6 percent if you are selling instruments, photo and optical goods.

And if you want to average the averages to arrive at a percentage, you will, according to INDUSTRIAL MARKETING, the source of these percentages, be a typical industrial advertiser. Your 1959 budget will represent 3.4 percent of your company's 1958 gross sales; you will spend 62.5 percent of your budget for advertising in business publications, for catalogs and for direct mail; and, for all I know, you will be married, have a family of six, own your own home, and detest after-dinner speakers.

PERCENTAGES DON'T MAKE SENSE

Percentages of the sort I've given you make little sense. The "percent-of-sales" method, in my opinion, not only impairs the potential effectiveness of advertising but also exposes the advertiser who regards advertising as an expense rather than an investment.

To make this clear, let's take the not-too-hypothetical case of one of our own clients, an advocate of the "percent-of-sales" method. Within his industry, the national percentage of gross sales is 2.5 percent. On this basis, his 1958 budget, in round figures, was $140,000. His budget for 1959, however, again in round figures, is $120,000.

In short, this advertiser is impairing his 1959 program because of business conditions that, a year before, depressed his 1958 gross sales!

And why? Because someone with a research complex decided to interview all major advertisers in his field, ascertain how much each appropriated annually for advertising and what percentage of gross sales this represented, strike an average and say: "There. If you make clay pigeons, thumb tacks or bathtub stoppers, your budgets should be, respectively, 3.7 percent, 4.2 percent and 2.5 percent of your gross sales of the year before."

A SECOND WRONG METHOD

A second method of budgeting is what we know as the "arbitrary" or "adamant" method, by which a budget is based purely and solely upon habit, tradition or whim.

To illustrate this and its assininity, let's take another not-too-hypothetical case of one of our own clients.

This client has appropriated $200,000---no more; no less---during each of the past four years. The reason? A modest reason: "Because..."

We have reminded him, annually and emphatically, that his program was going backwards instead of forwards each year...that his budget should have been increased at least 6 percent each year (Printers' Ink published 8.4 percent) simply to maintain the same program he inaugurated four years ago. We have reminded him that all his other costs, from raw materials to labor, have been going up continually and that he has consistently announced price increases on his products. His answer to all this seldom varies. "My budget," he says, "is $200,000. It's up to you to spend it effectively. Why, only the other day..."

Sure. We know what comes after that: "Why, only the other day another agency, soliciting our account, told us that they could do a magnificent job with our budget...that our account would be one of their largest and would be serviced accordingly."

The "adamant" method of budgeting can only make the agency's job increasingly difficult. For this client, we must annually reappraise and juggle his media schedule in order to buy coverage comparable with the previous year. Meanwhile, the advertiser loses continuity by having to shift out of some media into others or by reducing the frequency and number of insertions.

I'd take a diabolic delight in reporting as a sequel to this that this client's business has clearly reflected the folly of his adamant method of budgeting. Quite the contrary, his business has increased annually, even during 1958. We'll never know, of course -- nor will he -- how much more his business would have increased had his budget been determined intelligently and been less inflexible.

I might add here that an appalling 23.3 percent of industrial advertisers, according to INDUSTRIAL MARKETING, determine their budgets by the arbitrary or adamant method.

WHAT'S THE RIGHT METHOD?

We arrive finally at the one method of budgeting that makes sense and that is being adopted by more and more advertisers as they become increasingly aware of the potentialities of advertising. This is the so-called "task" method.

The "task" method, giving priority to the objectives of a program, is the method by which an appropriation evolves from the objectives to be attained. By giving priority to these objectives, this method enables the agency to plan and the advertiser to enjoy the advantages of a well-rounded, sustained program.

The arbitrary method, on the other hand, by giving priority to the budget, compels the agency and the advertiser to forego many of these advantages and to plan within the confining limitations of predetermined financial boundaries.

Some readers, at this point, may be saying: "This fellow is anything but impartial. He has an axe to grind. There'll always be an ad man and he'll always have an angle to induce advertisers to approve bigger and bigger budgets."

I'll not deny this. I'm not impartial; and if any advertising budget is inadequate to do an effectual job, it should be enlarged to do so.

But anybody who thinks this attitude selfish is forgetting the rapidly increasing numbers of advertisers who have accepted and are accepting the "task" method of determining their budgets. They aren't doing this because they like their agencies or because their agencies have sold them a bill of goods. They are doing it because they know that the task -- the objectives -- must come first.

The "task" method of determining budgets is fast becoming the symbol of the advertiser who has come to accept the fact that advertising is an investment and not an expense.

In the advertising agency business, it is almost axiomatic that an advertiser will be known by his method of budgeting. There are exceptions, of course, but if he has adopted the "task" method, the chances are good that he has also accepted his agency as the extension of his own advertising and marketing facilities; that his

advertising director is accorded the importance and given the autonomy and salary he deserves; and that he will regard all phases of advertising as vital to the growth of his business as any phase of research, production, sales or management.

I have seen an acceptance of the "task" method work wonders for a business; and I have in mind one client in particular who has been with us since 1931. From 1931 through 1945, this client's annual budget seldom varied. It was traditionally around $100,000 and there is stuck. Then a new president took over. He was young and progressive; and his company's advertising was one of his earliest investigations. The outcome of this was his endorsement of the "task" method. This client's budget for 1959 is $525,000, the advertising manager is now a vice president; and the business has grown more in the past 14 years than it grew in the previous 50.

"TASK" METHOD MEANS MORE FOR YOUR DOLLAR

I do not wish to create the impression that the "task" method is in any sense uncontrollable or that it leads inevitably to bigger budgets. It is controllable to a high degree. If the budget indicated is beyond the advertiser's reach, it's a simple matter to modify the task. And as to dollars, I have seen this method reduce budgets as well as increase them.

I have seen it replace advertising with creative publicity, save thousands of dollars and still increase the over-all effectiveness of a program. I have seen it reduce a media schedule from scores of publications to relatively few, with consequent economies and increased results. I have seen it discard a second color in trade-paper advertising to save, in one instance, $35,000 in production costs alone and still attain greater reader impact.

In the main, though, it will increase budgets simply because many industrial budgets are traditionally less than they should be and because no arbitrary budget can be adequate for a very simple reason: The advertiser who regards advertising as an expense and not an investment is psychologically certain to think in terms of dollars rather than objectives ... to have the quaint notion, at the first sign of a downturn in business, that he can save money by not advertising.

If I have any message to take to Garcia, let it be this: "Use whatever method of budgeting you wish -- 'percent-of-sales;' 'arbitrary'; 'adamant'; 'task' -- as long as it's basically the "task" method."

For an advertising budget to do a job, to achieve company objectives, it must be planned that way.

Elementary good business practice? Certainly. But the observance in the breech by so many advertisers is enough to convince you that it can't be said too often.

Tailor your ad budget to fit the task.

RESPONSIBILITY ACCOUNTING

(Cont'd. from Pg. 18)

hand at the end of the period being $39,000 less than it should have been. Apparently the Credit Manager and the Merchandise Manager did not work as closely together as they might have; the Credit Manager missed his budget on charges-to-customers by $200,000 while the Merchandise Manager missed his sales budget by $50,000. Moreover, the Credit Manager did not perform as well as planned on collections from customers: actual collections were $50,000 less than planned. Although the Accounts Payable Manager cleared vouchers for payment in the proper amount, he permitted credit purchases in an amount which exceeded his budget by $15,000.

The "Variance" columns and "% of Budget" column in the Budgeted Summary of Financial Transactions, provide a rich source of material for a top-level conference. Here is forward planning in action. Here is managerial control of a high order. Here, also, are some built-in executive incentives. Because of the Budgeted Summary of Financial Transactions, responsibility for results can be clearly determined. Each person has a greater responsibility than that of a simple net result; each is held accountable for gross results. The Budgeted Summary of Financial Transactions can be a basis for positive action. It engenders teamwork. It implements the "exception principle" of good management.

By: George R. Morton
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COST - VOLUME - PROFIT ANALYSIS

Is this a Technical Article? . . . . . Answer, Yes.
Is this an Informative Article? . . . . . Answer, Yes.
Is this Article Complete? . . . . . Answer, Yes.
Is this Article Practical? . . . . . Answer, Yes.
Will this Article Benefit You? . . . . . Answer, No.

(That is, Not Unless You Take Time to Read It. Then the Answer is, Yes.)

Cost – volume – profit analysis is often referred to as breakeven analysis, but the breakeven point is somewhat incidental to the comprehensive scope of cost – volume – profit analysis. An understanding of the relationships between costs, volume and profits has considerable significance in many areas of managerial decisions. A question might be raised as to what is the relationship between this type of analysis and budgeting. We know that the fundamental purpose of business budgeting is to find the most profitable course through which the efforts of the business may be directed, and to hold the business to that course. This is planning and control of profits. Any technique, then, that will assist in planning profits becomes related to budgeting.

Cost – volume – profit analysis is often applied to historical data, but the significant application is to future estimates or planning. Since this type of analysis is based on the assumption that variability of expense has been determined, to use it effectively with budgets, the budgets must be variable.

The accuracy and reliability of cost – volume – profit analysis depends upon the accuracy with which cost variability has been determined. If cost control has been poor, then the relationship between costs and volume may be difficult to determine and the chance of error will be high.

Without getting into a detailed discussion of fixed and variable expenses, let us consider a few of the more important points as applied to cost – volume – profit analysis.

1. For various reasons fixed costs are not 100% fixed for the entire range of production from 0% to 100% of capacity, but they will remain fixed over the relevant range of activity and for the duration of the time period that we must consider.

2. Variable costs increase or decrease directly with changes in activity within a normal range of activity.

3. For practical purposes semivariable costs are divided into fixed and variable components and any step or curved costs are budgeted on a straight line basis.

MATHEMATICAL RELATIONSHIPS

Once expense variability is determined, cost – volume – profit analysis is primarily a mathematical technique. The breakeven chart in its many variations serves to illustrate the underlying concepts.

Some of you may be surprised that charts are not used as illustrations in connection with this article. But I believe that the emphasis often rests too heavily on the charts themselves and the limitations of the charts may be ac-

cepted as limitations of the over-all analysis.

The derivation of the basic mathematical relationships is not difficult. Let us start with a formula for total cost.

Total Cost = Fixed Expense + Variable Expense or – $C = F + V$

Since it is desirable to express variable expense in terms of sales we can substitute as follows:

$$C = F + \frac{V}{S} S$$

Assume that the ratio of variable expense to sales is 65%. The formula for such a situation becomes –

$$C = F + 65\% S$$

With the additional knowledge of the amount of fixed expense, total costs can now be determined for different levels of sales volume.

The next formula to consider is one for profit.

$$\begin{aligned} \text{Profit} &= \text{Sales} - \text{Total Cost} \\ P &= S - (F + \frac{V}{S} S) \\ &= S - \frac{V}{S} S - F \\ &= (1 - \frac{V}{S}) S - F \end{aligned}$$

Assuming the same ratio of variable expense to sales (65%) the formula becomes –

$$P = 35\% S - F$$

Again, with the additional knowledge of the amount of fixed expense, profits may be determined for different levels of sales volume.

An important part of this disseration is the formula for sales at the breakeven point. At this point profit equals zero and we must find a value for sales.

$$\begin{aligned} 0 &= (1 - \frac{V}{S}) S - F \\ (1 - \frac{V}{S}) S &= F \\ S &= \frac{F}{1 - \frac{V}{S}} \end{aligned}$$

Or, as more commonly expressed –

$$BEP = \frac{F}{1 - \frac{V}{S}}$$

To meet the situation expressed in the first two illustrations (variable expense equal to 65% of sales) –

$$BEP = \frac{F}{35\%}$$

Note that in two of our formulas we have subtracted the variable cost ratio from one $(1 - \frac{V}{S})$. For example, the 35% derived in the illustration above indicates that 35% of sales are available to cover fixed costs and profits. This factor has been given various names, such as –

1. Contribution of sales to fixed cost and profit.
2. Ratio of variable income to sales.
3. Profit – to – Volume ratio.
4. Marginal Profit ratio.

MARGINAL INCOME

This leads us to another consideration – that of marginal income. Suppose that a company is considering a lower sales price or mark up in order to obtain certain additional business. This is sometimes advisable when the long term pricing policy will not be affected. A formula for marginal profit will prove helpful in making such decisions.

Assume, also, that fixed expenses are already covered by the company's normal business and that the company is earning a profit.

Let S = Normal sale price

R = Percent of normal sale price considered for marginal business.

$$\begin{aligned} \text{Marginal Profit} &= \text{Sales} - \text{Variable Expense} \\ &= R S - \frac{V}{S} S \\ &= (R - \frac{V}{S}) S \end{aligned}$$

As an illustration, assume that management reduces normal sale price by 15% and that variable expense equals 65% of sales.

$$\begin{aligned} \text{Marginal Profit} &= (85\% - 65\%) S \\ &= 20\% S \end{aligned}$$

The above formula is useful when we are considering the sales of only one product or a mixture of products with identical profit margins. However, this is an oversimplification of the customary situation. Usually we must work with a mixture of products that have different profit margins. When considering marginal income for individual products, then, it is desirable to have a formula which recognizes the profit margin for that specific product. To develop this formula let us make the following assumptions.

Variable Expense	= 65% of average Sales
	= 97.5% of Manufacturing Cost
Average Sales Price	= 150% of Manufacturing Cost
Range of Price Levels	= 130% to 170% of Manufacturing Cost
	C = Manufacturing Cost
	L = Price Level

As stated above –

$$\text{Marginal Profit} = \text{Sales} - \text{Variable Expense}$$

$$= PS - 97.5\% C$$

$$C = \frac{S}{L}$$

Substituting $\frac{S}{L}$ for C –

$$\text{Marginal Profit} = RS - 97.5\% \frac{S}{L}$$

$$= \left(R - \frac{97.5\%}{L}\right) S$$

Numerical values of $\frac{97.5\%}{L}$ are easily calculated for any value of L between the range of 130% to 170%.

MARGIN OF SAFETY

The difference between budgeted sales and the breakeven point is called the margin of safety. It is usually expressed as a ratio of per cent of budgeted sales. For example, if the breakeven point is 55 per cent of budgeted sales, then the margin of safety is 45 per cent. This is a very important measure of the profit strength of a business.

Actually, if sales declined 45 per cent, the relevant range would probably be exceeded and, as a result, changes in the basic cost – volume – profit relationships would take place. Thus the margin of safety is a theoretical ratio which may not hold with a high degree of exactness if conditions occur which cause it to be tested. However, a company with a high margin of safety is less vulnerable to a decline in sales than one which has a very narrow margin of safety.

INVENTORY CHANGES

In many cost – volume – profit analyses budgeted inventory changes are immaterial in amount and may be disregarded in the computations. However, with significant changes in inventory the true economic characteristics of a concern may not be revealed without taking the changes in inventory into consideration. The fixed costs capitalized in inventory or transferred from inventory are the costs that will affect the determination of economic characteristics. Since fixed costs are not capitalized when direct costing is employed, it is only under an absorption costing plan, wherein fixed costs are included in product costs, that we must face this problem.

In the long run we must include in our computations the fixed costs, and only those fixed costs, that enter into cost of sales. If inventory is increased, we must deduct the fixed expense capitalized. Conversely, if inventory is decreased, we must add the fixed expense removed from inventory.

The formula for profit could then be shown in the following form:

$$P = \left(1 - \frac{V}{S}\right) S - (F \pm F_I)$$

F_I represents the fixed cost added to or removed from inventory.

ANALYSIS BY PRODUCTS

Inasmuch as many business decisions relate to individual products, it is desirable to apply the cost – volume – profit analysis to the separate products. The same technique used for analyzing over-all operations can be utilized in in developing analyses by products.

The reliability of breakeven points for individual products depends to a great extent upon the procedure followed for allocating common fixed costs to product lines. However, if the interest is centered on marginal income by products rather than breakeven points, no allocation of fixed costs is necessary.

The relationship between the breakeven points for individual products and the over-all breakeven point may be puzzling at first. As a rule, the sum of the individual breakeven points will not equal the over-all breakeven point. The explanation of this apparent paradox is that we are dealing with different product mixes. The sales mix as determined by the individual breakeven points usually differs from the mix employed when calculating the over-all breakeven point.

RULES AND GENERALIZATIONS

1. A change in the amount of fixed cost changes the breakeven point and the operating profit, but does not affect the marginal income ratio.

2. A change in the variable cost changes the breakeven point, the marginal income ratio and the operating profit.

3. A change in the selling price results in similar changes as caused by a change in the variable cost.

4. As a corollary to the first point, the marginal income ratio is affected only by changes in selling price or variable cost.

5. A high margin of safety indicates a considerable drop in sales volume can take place before showing a loss provided that the variable expenses are carefully controlled in line with the decreasing sales.

6. When the marginal income ratio is high, large profits result from comparatively small increases in volume above the breakeven point. Conversely, small declines in sales will cut deeply into profits.

7. A low marginal income ratio requires considerable change in sales volume to cause any significant change in profits.

8. If large increases in volume are attained at a low marginal income ratio, additional work-

ing capital may be required faster than it is made available by the increase in income.

9. A high marginal income ratio with a low margin of safety probably indicates an excess of fixed costs for the sales volume.

10. A low marginal income ratio and a low margin of safety may indicate that variable costs are too high or that sales prices are too low.

APPLICATION OF COST – VOLUME – PROFIT ANALYSIS

Most business decisions involve the selection of alternatives. Cost – volume – profit analysis provides an excellent device for testing the effect of numerous alternatives on profits. It is fairly simple to determine at various ranges of volume what the effect on profits will be of contemplated changes. Also, the volume of sales required to support predetermined profit goals can be determined easily.

We know that the marginal income ratio represents the contribution to fixed cost and profit. By modifying our formula for the breakeven point slightly we can use it to determine the sales volume required to earn a given profit amount.

As stated previously –

$$\frac{\text{Fixed Costs}}{\text{Marginal Income Ratio}} = \text{Sales at Breakeven Point}$$

This formula can be changed as follows:

$$\frac{\text{Fixed Costs} + \text{Desired Profit}}{\text{Marginal Income Ratio}} = \text{Sales Volume Required to Earn Stated Profit}$$

In addition to calculating the breakeven point, the above formula may be used to determine the sales volume required for each of the following situations.

1. Payment of dividends on preferred stock.

2. Payment of dividends on common stock.

3. Earning of budgeted (planned) profits.

This same procedure can be used to evaluate the advisability of plant expansion. To study this problem the following data could be obtained.

1. The relative break even points.

2. The sales volume required to earn existing profits.

3. The sales volume required to earn a fair return on the investment.

The formula for profit would also determine the maximum profit possible to earn after the expansion.

Another interesting problem that can be solved by cost – volume – profit analysis is the most profitable use of scarce material. If this material is used in several products, all we need to know is the marginal income ratio for each product. We can then determine the marginal profit per unit of scarce material.

Another modification can be made in the formula above to answer various questions in regard to the effect of changing selling prices.

$$\text{Sales Volume Required} = \frac{\text{Fixed Costs} + \text{Desired Profit}}{1 - \frac{\text{Present Variable Expense Ratio}}{\text{Ratio of Proposed Price to Present Price}}}$$

By following this procedure the sales required to earn any reasonable profit amount with either increasing or decreasing selling prices can be determined.

SELECTING AN EXPENSE ABSORPTION LEVEL

For the years 1954 to 1958 manufacturing capacity has increased at almost a constant rate, but for the years 1956 to 1958 production has not increased proportionately. As a result many companies find they have excess capacity today.

The cost systems of most companies provide for the inclusion of all factory expense in inventory values at either actual or standard rates. This procedure is known as "absorption costing". When standard rates are used, the first step in building the rates is to establish a level of activity at which the total factory expense will be absorbed. This volume is usually based on the average sales over a period of years so that actual expense is exactly absorbed in that period. It is considered to be "normal" volume. It will result in excess costs being charged to products which may mislead management in certain decisions. A better procedure is to recognize the costs of idle capacity.

The breakeven point can be used as one guide as to what "normal" volume should be. Over the years the breakeven points of leading industries have averaged 50 percent of sales. This ratio varies by industry, but limited statistics by industry are now available and more will be in the future. A study of desirable breakeven ratios along with future sales prospects will aid in selecting "normal" volume.

NEWS ABOUT MEMBERS

HAL MASON, National President, presents the Charter to the Kansas City Chapter. Kansas City represents the 30th NSBB Chapter in the United States. Accepting for the Chapter is STEWART MITCHELL, Chapter President.

C.C. BENEDICT of the Detroit Chapter has a new assignment at the Chrysler Corporation. He has moved up from Manager-Profit Analysis to Assistant Treasurer. Congratulations, Ben!

JOE ALVAREZ of the St. Louis Chapter gave a talk and served as moderator for a group discussion on "Accounting for Marketing and Distribution Costs" at a NAA seminar at St. Louis University on April 28, 1959.

Granted the San Francisco-Bay Area Chapter is only three years in operation, but we think the single sheet listing of all officers and committee men plus a few short notes concerning the highlights of the chapter beginnings is a fine start to a complete historical record of the Chapter. This listing was given to all chapter members and apparently all who receive their chapter newsletter.

Chicago Chapter Treasurer, NORRIS THOMPSON addressed two Business Budgeting classes at Loyola University, substituting for JULIAN ALTMAN who normally presides. LEW LANDRETH, DON BACON, ROY KAMIN and WALT VERBECK attended an organizational luncheon for the proposed Skokie Valley Chapter of NSBB.

Have you ever had one of your program speakers picketed while speaking at your meeting? The San Francisco Chapter did! About 25 employees of the Pacific Telephone and Telegraph Company showed up at the hotel where the chapter was holding their meeting to protest the loss of their coffee break privileges. The speaker for the evening was R.E. Hambrook, a vice president of PT&T. One of the pickets carried a sign which said. "Hambrook Does the Budget have Coffee Breaks. DO You Have Yours??" Sort of a left-nanded compliment to our budget organization, wouldn't you say.

GENE MIDDLEKAMP who was instrumental in forming the Dayton Chapter when he moved from Cincinnati to Dayton several years ago is now coming back to Cincinnati. Welcome home, GENE. At the University of Toledo's Motor Carrier Management Conference a talk was given by FRED KIEFFER of The Cincinnati Chapter. His subject was "Cost Reduction Thru Use of Budgetary Control and Performance Standards."

LEE MILLER of the Milwaukee Chapter so far is operating on a speech a month basis. He has given talks in each of the first four months this year on Budgeting and Allied Subjects at Universities and Conferences in the area around Milwaukee.

We note that DUANE (DEWEY) BORST, Director of Budgets for Joseph T. Ryerson & Sons, Inc., and a Chicago Chapter member is participating in

Following the Charter presentation, the KANSAS CITY Chapter members paused long enough to have their picture taken. National President, HAL MASON is shown with the Chapter Officers in the back row. Pictured from left to right back row, are: ELDON GILLESPIE, Treasurer; STEWART MITCHELL, President; HAL MASON, National President; WES SMITH, Vice-President; MIKE MICHEL, Secretary. In the foreground are members of the chapter.

the Profit Management Seminar sponsored by the University of Wisconsin.

When we listed the charter members of the new KANSAS CITY Chapter we failed to include the following three men who are also charter members of our KC Chapter. D. M. KAROS, Trans World Airlines; H.L. FRIESZ, Midland Manufacturing Co.; and J. A. SKINNER, Trans World Airlines.

The NEW YORK Chapter had guests from the following colleges and universities at the March Meeting: C C N Y, Pace College, Brooklyn College, New York University and Columbia University. They received several letters of appreciation from the students thanking them for allowing them to attend their meeting, and become familiar with our organization.

A former member of the New York Chapter WILLIAM S. LEONHARDT, who resigned last October when he moved up from Budget Director to Treasurer of Commercial Solvents Corporation has taken another step upward. It was recently announced that he has now been named Financial Vice President and Treasurer.

PAUL ROMINE of the St. Louis Chapter has been transferred by his company, the Union Starch & Refining Co. to Columbus, Indiana.

FRANK FORTH of the Los Angeles Chapter has been named Director of Finance at the Thiokol Chemical installation located in Brigham City, Utah. HAL COLTMAN, also of LA, spoke to the Orange Empire Chapter of the National Machine Accountants Association. His subject was "Elements of Management Selection."

New Chapters are reported to be just about in the fold. In fact by the time this is in print, Peoria, Pittsburgh and Skokie Valley will be our next chapters. Things are really moving in this direction, thanks to our active chapter formation group. Congratulations fellows!

NOTICE TO OUR READERS: These pages are always open to your comments. If you should like to comment, argue or expand further on any article appearing in these pages, drop us a line. We'll be glad to print it.

Our Louisville Chapter reports that I.L. GRIFFIN of General Electric of Louisville has been transferred to Syracuse, N.Y. to assume his new position of Manager-Marketing, Television Dept. We would like to add our "Good Luck" wishes also "Chuck".

It has only recently been reported to us that we have been showing on our inside cover page an incorrect name as President of the San Diego Chapter. We apologize to RALPH J. KULK for not knowing our error – But it points out a lesson – Please let us know when our information is incorrect. Drop a note to Larry Haverkamp, Trail mobile, Inc., Cincinnati 9, Ohio.